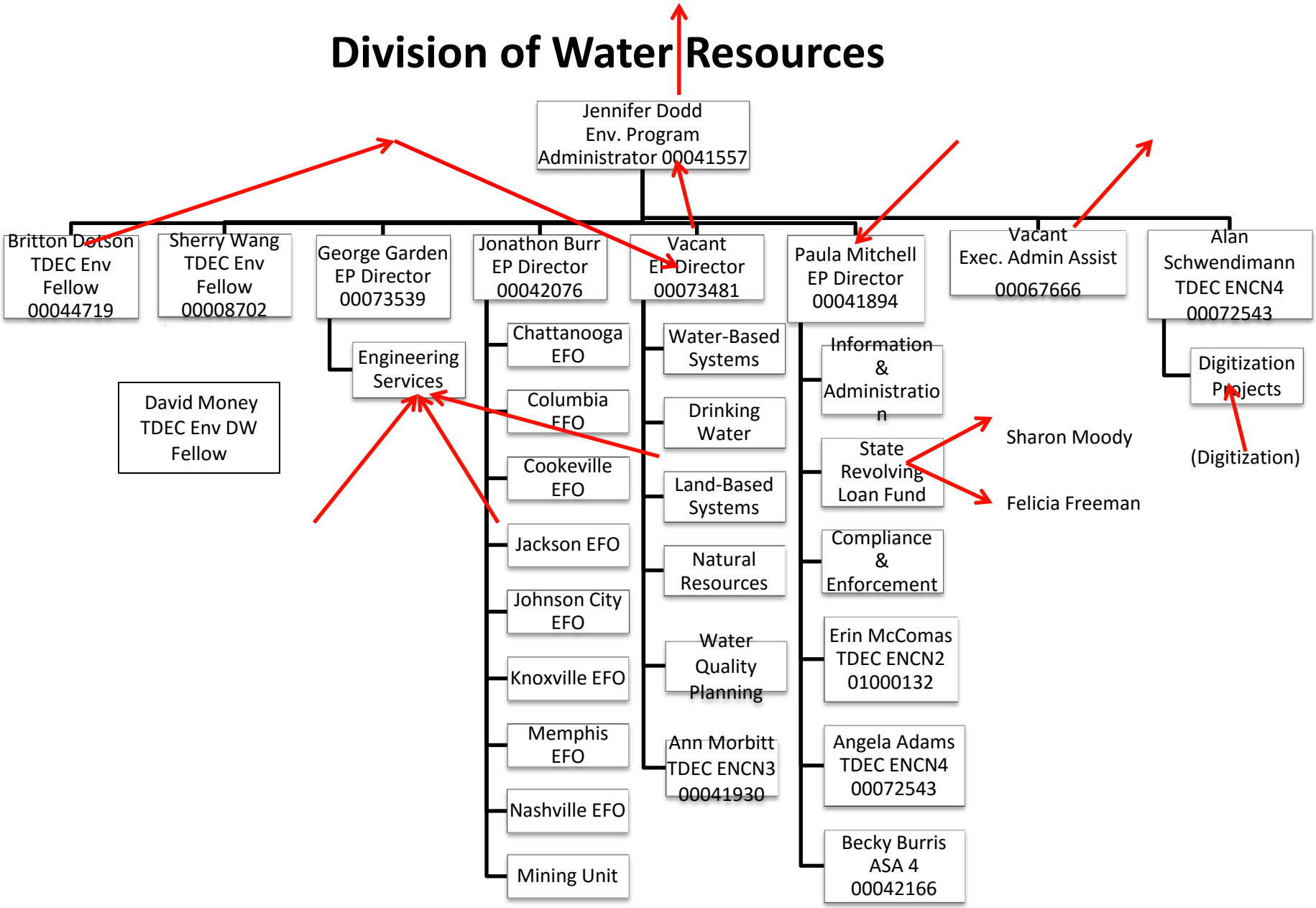
Department of
Environment &
Conservation

Water Resources Update

May 17, 2018
Environmental Show of the South

Division of Water Resources



5/30/2018

Where We Are: Scanning Progress to Date

Counties Completed: Bradley, Carter, Clay, Cumberland, Greene, Hancock, Hawkins, Johnson, Pickett, Robertson, Sullivan, Unicoi, Washington and Wilson

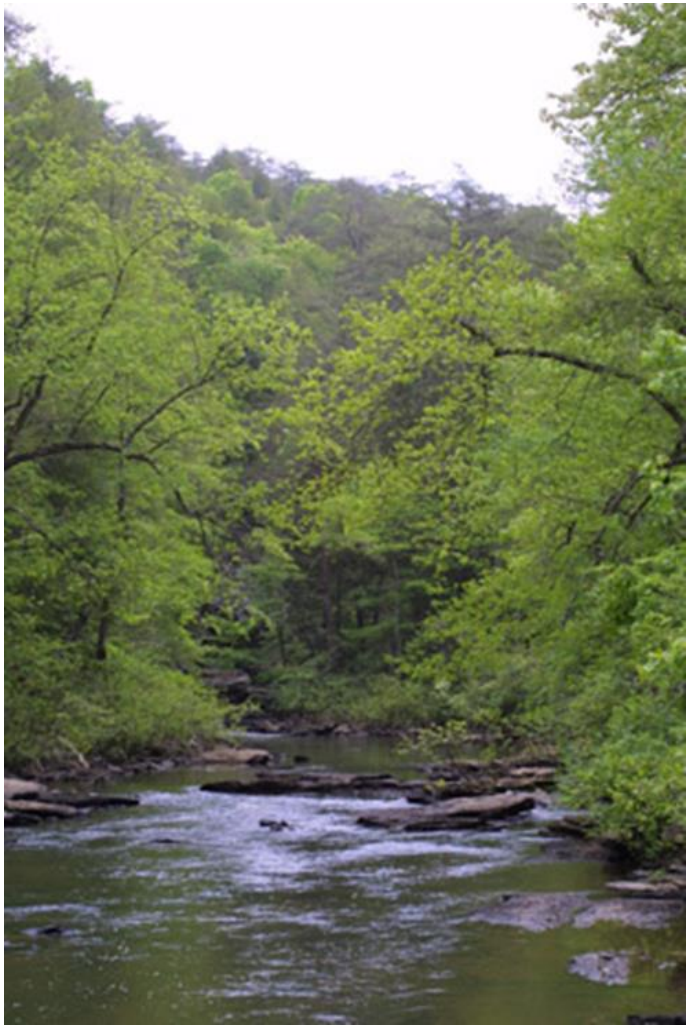
Currently Scanning: Sumner, Fayette, Carroll, Maury, Bedford, Marshall, Loudon and Anderson

Over 800 ft3 scanned to date

EFO's beginning to scan → 5000 ft3? ☺

Contract Counties

Alphabet Soup



ARAP

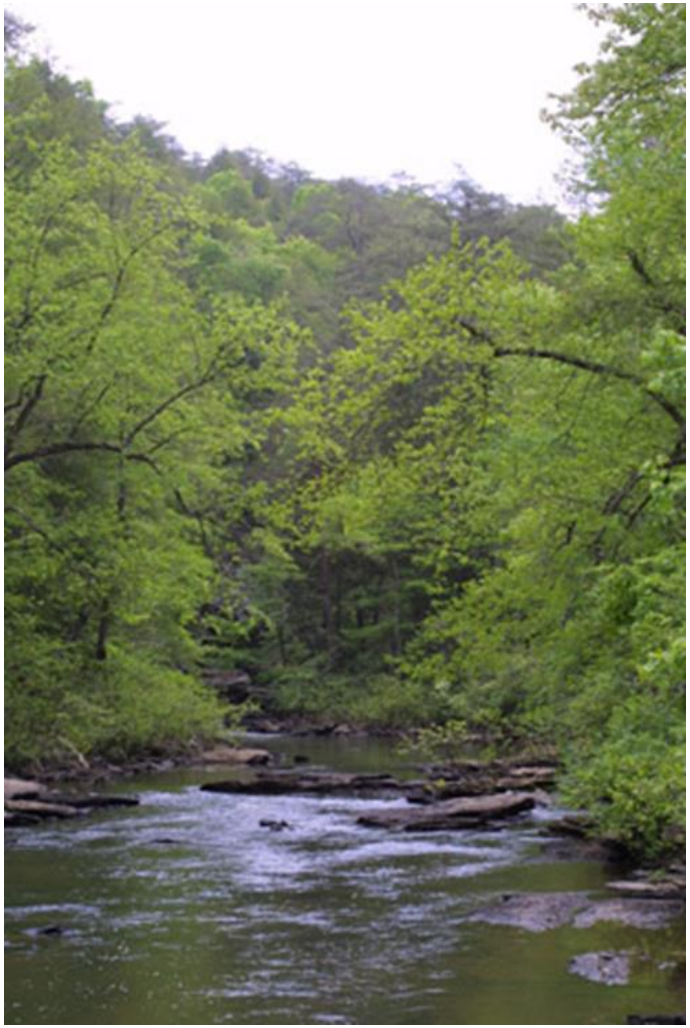
MS4

WQS 3A

Rule Making:

- NPDES ←→ SOPs
- Plans ←Land App & Reuse
  ← Integrate Permitting
  → I&I & Water Loss

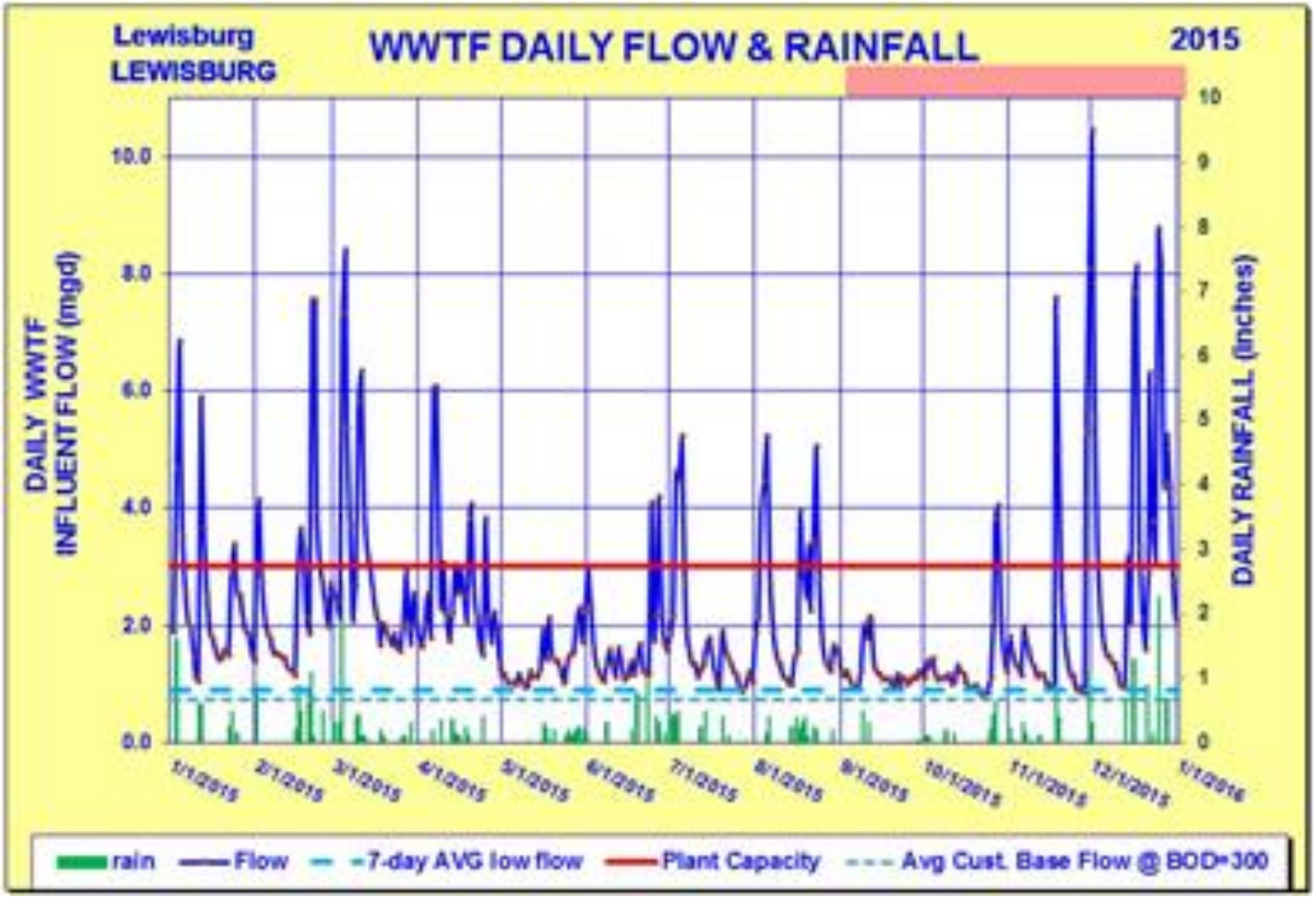
Mission – DWR – Engineering Services



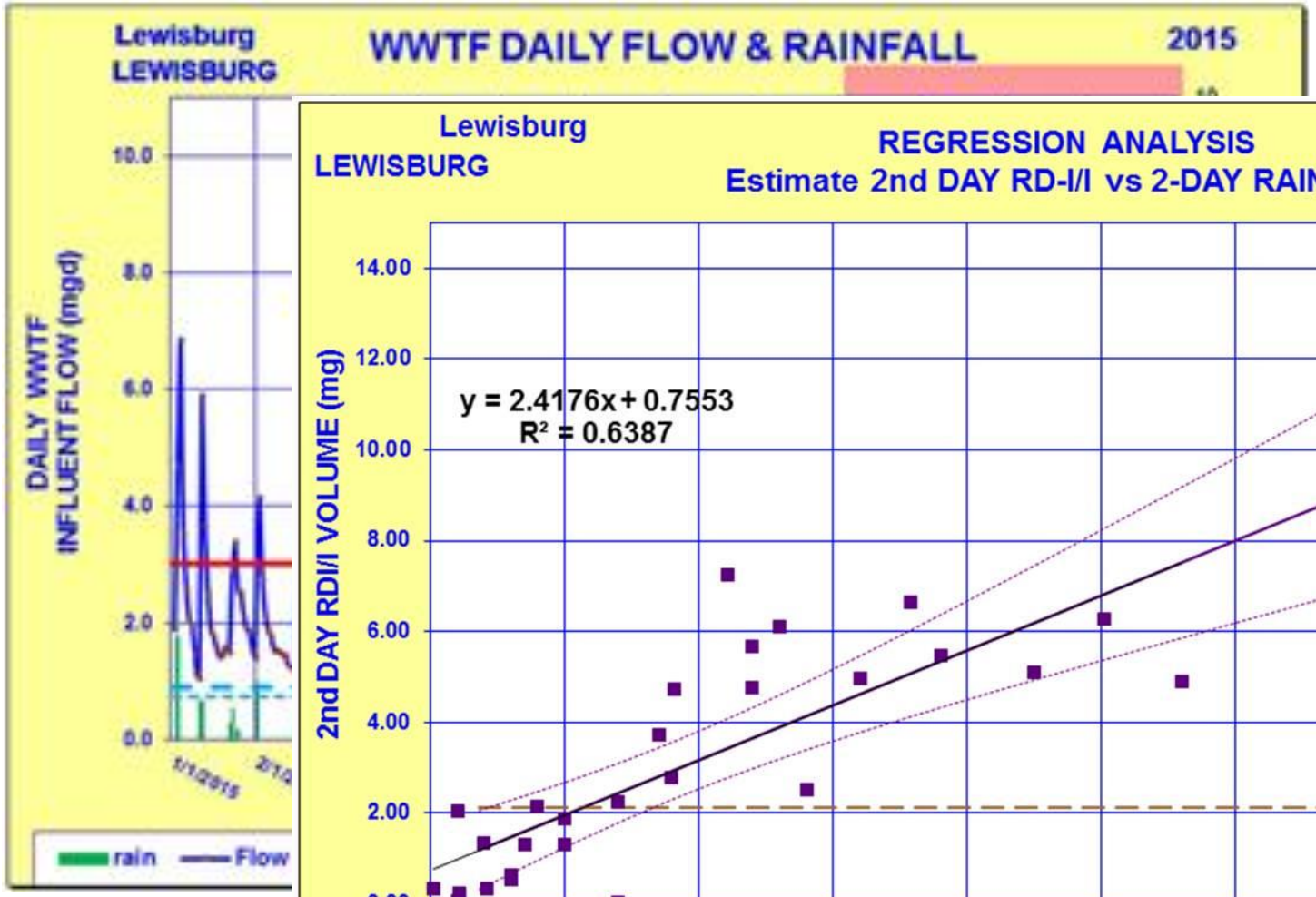
- Define standards and manage engineering construction documentation including
  - PERs (Alternatives Analysis based on **LIFE CYCLE COSTS**)
  - Engineering Reports/Basis of Design
  - Construction Documentation
  - Reflects **generally accepted water & wastewater standards**
- **Fiduciary Responsibility → Engineers tell you what it is going to cost**
- **Maintain the big picture**

Financial Hemorrhaging in W & WW

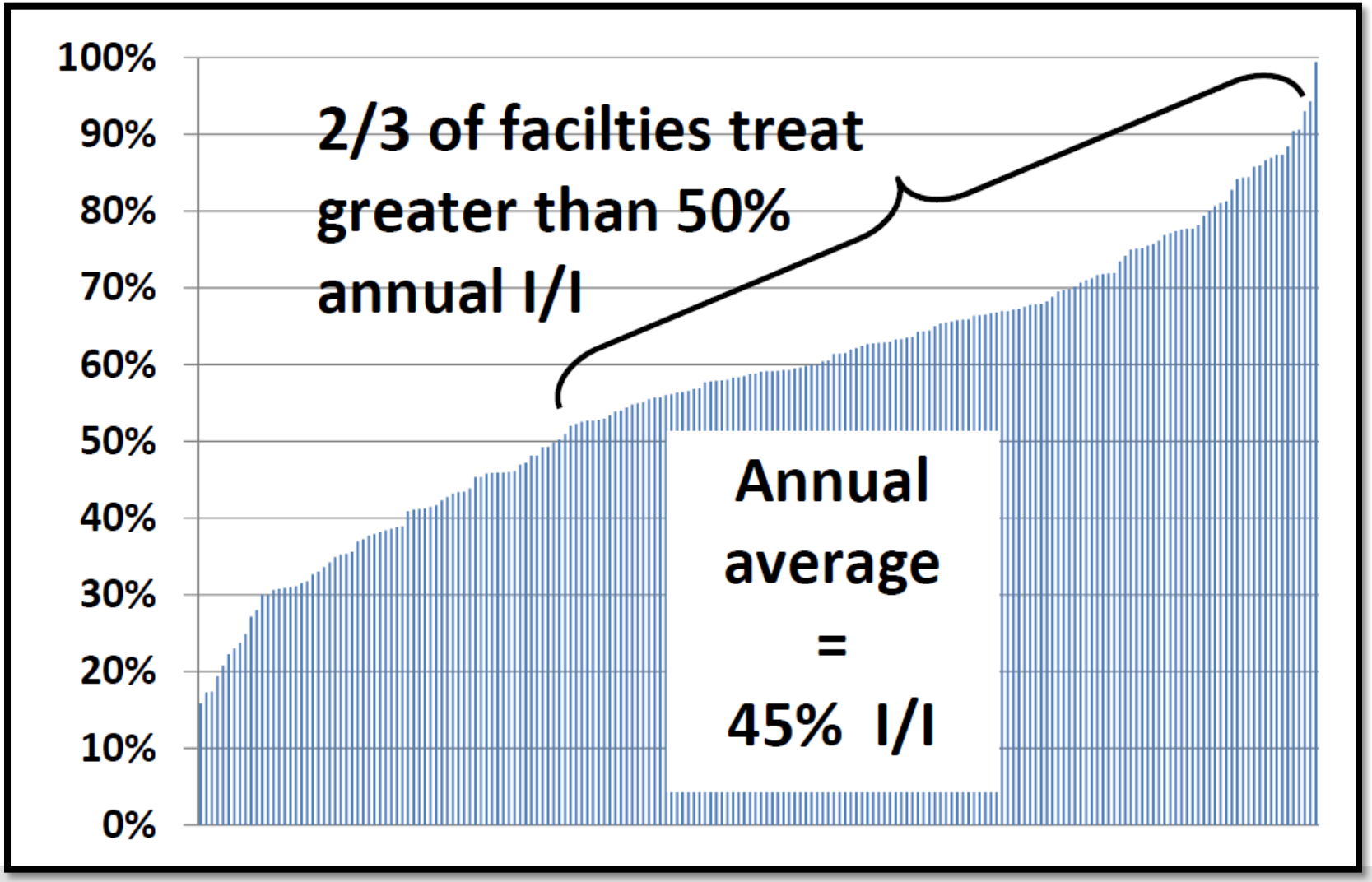
I&I Metrics Available



We can look at annual results per system



We can roll up state-wide data



Inflow and Infiltration

- **120 Billion gallons (BGD) of I&I** treated in TN annually
- **331 MGD of I&I on average per day** treated in TN
- Public Health/Environment:
  - **181 of 242 (or 82%) of municipal WWTPs who exceed their rated capacity in the event of a 2 year 24 hr storm (3.4 inches)**
- Cost to treat I&I in Tennessee at $1.80/1000gallons =

  $200,000,000/year

Does not include **water that does not get to or that exceeded the influent flow meter capacity of the WWTP.**

Does not include extra **debt service and depreciation** on **extra** capacity already installed.

I&I Implications

- $$$$ to pump in addition to treat clean I&I water → higher maintenance costs→ higher operational costs →

  HIGHER SEWER RATES.
- **Loss of WWTP CAPACITY** available to customers or ADDITIONAL COMMUNITY DEVELOPMENT
- **DEGRADATION** OF RECEIVING WATERS → ALGAE → INCREASING WATER TREATMENT challenges and HABs AND **DIMINISHMENT** OF RECREATIONAL OPPORTUNITIES and QUALITY OF LIFE
- It means a WWTP **upgrade LARGER AND SOONER** than necessary

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
\+ Click to add a comment

Water Audit Report for: << Please enter system details and contact information on the Instructions tab >>
Reporting Year:

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

PLEASE CHOOSE REPORTING UNITS FROM THE INSTRUCTIONS SHEET BEFORE ENTERING DATA

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

			Pcnt:	Value:
Volume from own sources:				
Water imported:				
Water exported:				

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 0.000

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

		Pcnt:	Value:
Billed metered:			
Billed unmetered:			
Unbilled metered:			
Unbilled unmetered:	0.000	1.25%	

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 0.000

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption) 0.000

Apparent Losses

		Pcnt:	Value:
Unauthorized consumption:	0.000	0.25%	

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	0.000		
Systematic data handling errors:	0.000	0.25%	

Apparent Losses: 0.000

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 0.000

WATER LOSSES: 0.000

NON-REVENUE WATER

NON-REVENUE WATER: 0.000

= Water Losses + Unbilled Metered + Unbilled Unmetered

WATER LOSS

- ADMIN LOSSES
  - Total Apparent Losses: 5,000,000,000 gal/year
  - Cost of Apparent Losses: $30,000,000/year
  - Average Cost of Apparent Losses: $86,000/year

- REAL LOSSES = ADMIN + PHYSICAL
  - Total Real Losses: 65,000,000,000 gal/year
  - Cost of Real Losses: $50,000,000/year
  - Average Cost of Real Losses: $143,000/year

Water Loss Implications

- **Lost (product)** $$$$
- Higher operating costs → higher maintenance costs → **HIGHER WATER RATES**
- **Resource (raw water) DEPLETION**
- HIGHER **VULNERABILITY TO DROUGHT**
- It means a WTP **upgrade LARGER AND SOONER** than necessary.

Drought solutions: Far and away the most important are **REDUCTION OF WATER LOSS** and CONSUMER POTABLE WATER **CONSERVATION**

Utilities with success in reduction of water loss invariably indicate a POSITIVE and SHORT RETURN ON INVESTMENT

So what are you doing TDEC?

- **Every** WWTP or WTP project has to have REASONABLE **ALTERNATIVES** evaluated on a **LIFE CYCLE COST** basis → the impact of capacity increases vs. solving Water Loss and I&I MUST be considered in the analysis → TDEC-DWR is authorized to judge engineering documents on generally accepted standards.
- **NPDES permits** (WWTPs) and **ARAPs** for WTPs will consider I&I and Water Loss in approval process.
- Workshops to present **best practices (in house & contract)→ Send your people!**
- CDBG **technical scores** will consider
  - **MEASUREMENT**
  - **PLANNING**
  - **ENGINEERED APPROACH**

I'd like to encourage you to:

- **Know the actual cost** (usually /1000 gallons) the cost of producing your water and treating your wastewater.
  - Appoint a member of the Board to be the production financial guru
  - **No one can do everything; everyone should do something.**
- ***MEASURE*** where your water is going; you can't manage anything that you can't/don't measure.
  - **Master meter FLOW calibration**
  - **Organic system meters: start building it in now**
  - **Attack, attack, attack the low hanging fruit with what you have.**
- Forget the "Pacman Jones injunction" → "nothing good happens after 2 am"
  - Best data is between 1-4 am for water and sewer
  - Find a couple of night owls for your staff

Leadership Maxim

You get what you *inspect*
and NOT what you *expect*.

Civilian Corollary:
Your people WILL care about what YOU care about.

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